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The time period for reply, if any, is set in the attached communication.



### DETAILED ACTION

- a. This action is taken in response to Remarks and Amendments filed on 6/6/2008.
- b. Claims 3, 9, 11 and 12 are amended and claims 21 to 25 have been added.

Claims 1-16 and 21-25 are pending in this Office Action. Claims 1 and 12 are independent claims.

### *Claim Objections*

Claims 3 and 5 are objected to because the cited limitation “**other dimensions**” renders the claim indefinite. It is unclear what constitute to “other dimensions”.

Claim 4 recites the limitation "**the time dimension**". There is insufficient antecedent basis for the limitation in the claim. Similar informality exists in claim 12.

Claim 9 recites the limitation "**the single portioning dimension**". There is insufficient antecedent basis for the limitation in the claim.

Claim 11 is objected to because the cited limitation “**another dimension-based partitioned cube**” renders the claim indefinite. It is unclear what constitute to “dimension-based partitioned cube”.

Claim 12 is objected to because of the following informalities: in line 8, “**cubes though**” should be “**cubes through**”. Appropriate correction is required.

Claim 22 re-introduces “**metadata**” although previously introduced in proceeding claim 12. It is not clear if it is a new instance of “metadata” or a reference to the original metadata thus lacks antecedent basis (should be preceded with “said” or “the”). Clarification is required.

Art Unit: 2166

***Objection -- Specification***

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

Claim 1 recites the limitation of “a processor”, “a memory”, however, the specification of the disclosure is completely silent on the subject matter of “processor” or “memory”.

***Claim Rejections – 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-11 and 21 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The claims lack the necessary physical articles or objects to constitute a machine or a manufacture within the meaning of 35 USC 101. They are clearly not a series of steps or acts to be a process nor are they a combination of chemical compounds to be a composition of matter. As such, they fail to fall within a statutory category. They are, at best, software *per se*.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Art Unit: 2166

Claims 24 and 25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 24 recites; “adding a member cube to a control cube.” is not supported in the Specification as filed. As shown in Fig. 3 and specification page 5, line 4, “Member cubes 22 may be added to, or removed from, the TB cube 20”, i.e. member cubes are added or removed from TB cubes 20 not Control Cube 21. Same rationale applies to claim 25.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 4, 6-7, 9, 11-16, , and 21-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Joy Mundy (“Using Partitions in a Microsoft SQL Server 2000 Data Warehouse”, February 2001, [http://technet.microsoft.com/en-us/library/aa902650\(SQL.80\).aspx](http://technet.microsoft.com/en-us/library/aa902650(SQL.80).aspx), hereinafter Mundy).

Art Unit: 2166

**As to claim 1**, Mundy discloses a computer-implemented system for storing data (page 1, data warehouse), the system comprising:

a processor for executing instructions (page 8, multiprocessor machine); and

a memory operatively coupled to the processor for storing the instructions (page 8, multiprocessor machine), the executed instructions providing:

one or more member cubes (page 7, partitioned cubes) storing data partitioned along a single partitioning dimension (page 10, partitions related to the Dates dimension);

a control cube having metadata about the one or more member cubes, the control cube accessing the member cubes (pages 6, 9, meta data, partition management system is driven by meta data, the partition meta data stores the information necessary to populate the partition).

**As to claim 2**, Mundy discloses wherein the control cube has an entire partitioned dimension relative to the member cubes (page 6, meta data contains ranges of data in partitions).

**As to claim 4**, Mundy discloses wherein the data is partitioned along the time dimension (page 4, partitioning dimension, Dates).

**As to claim 6**, Mundy discloses the system as claimed in claim 5, wherein a member cube is added to the system (page 6, creating new partitions).

Art Unit: 2166

**As to claim 7**, Mundy discloses the system as claimed in claim 5, wherein a member cube of the one or more member cubes is removed from the system (page 10, drop old partitions, merge partitions).

**As to claim 9**, Mundy discloses the system as claimed in claim 5, further comprising a plurality of control cubes, each control cube coupled with a group of member cubes from a pool of member cubes partitioned along the single partitioning dimension to form a separate dimension-based partitioned cube (page 11, cube is partitioned by another dimension in addition to the date).

**As to claim 11**, Mundy discloses the system as claimed in claim 2, wherein a member cube of the one or more member cubes is a control cube of another dimension-based partitioned cube (page 11, partitioned by date and product).

**As to claim 12**, Mundy discloses a method of transforming a body of data into a dimension-based partitioned cube (page 1, using partitions in data warehouse), the method comprising the steps of:

partitioning the data into one or more dimension-based partitions (page 7, partitioned cubes), the data partitioned along a single partitioning dimension (page 10, partitions related to the Dates dimension);

creating member cubes corresponding to the one or more dimension-based partitions (pages 10-11, create new partitions, managing the partitioned cube);

Art Unit: 2166

creating a control cube having metadata about the member cubes (pages 6, 9, meta data, partition management system is driven by meta data, the partition meta data stores the information necessary to populate the partition); and

accessing the data distributed over the member cubes through the control cube (page 6, populating the partitions using meta data).

**As to claim 13**, Mundy discloses wherein the data is partitioned along the time dimension (page 4, partitioning dimension, Dates).

**As to claims 14-16**, Mundy discloses the method claimed in claim 13, wherein the data is partitioned into equidistant, non-equidistant or sliding window of time intervals (time [date] dimension is usually the first partition dimension, pages 7 and 8, and can be choose a different granularity such as day, week, month or year, page 5. It is common to define a partition plan that drills down on one part of the cube. For example, recent data may be partitioned by day or week, older data by month or year, pages 9 and 15. Different time interval partition, equal interval: days, non-equal interval: day-week, sliding window interval: day, week, month, year, is used to build partition in order to minimize the number of active partitions).

**As to claim 21**, Mundy discloses system as claimed in claim 1, wherein the metadata comprises: information describing how the member cubes are related to each other along the



Art Unit: 2166

single partitioning dimension; and information describing what the member cubes are, and how the member cubes are deployed (page 6, partition name, ranges of data in partition...).

**As to claim 22**, Mundy discloses method as claimed in claim 12, wherein creating the control cube further comprises: including metadata describing how the member cubes are related to each other along the single partitioning dimension; including metadata describing what the member cubes are, and how the member cubes are deployed (page 6, partition name, ranges of data in partition...).

**As to claim 23**, Mundy discloses the method as claimed in claim 12, wherein accessing the data distributed over the member cubes through the control cube comprises accessing an entire partitioned dimension relative to the member cubes (pages 6, 9, meta data, partition management system is driven by meta data, the partition meta data stores the information necessary to populate the partition)

**As to claim 24**, Mundy discloses the method as claimed in claim 12, further comprising adding a member cube to the control cube (page 6, creating new partitions).

**As to claim 25**, Mundy discloses method as claimed in claim 12, further comprising removing a member cube from the control cube (page 10, drop old partitions, merge partitions).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 3, 5, 8, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mundy as applied to claims 5 and 9 above, and further in view of Pasumansky et al. (US Patent 6,477,536, hereinafter Pasumansky).

**As to claim 3**, Mundy discloses the system as claimed in claim 2, but does not explicitly disclose wherein the metadata further includes: a listing of other dimensions of the member cubes and a listing of measures of the member cubes.

Pasumansky discloses wherein the metadata further includes: a listing of other dimensions of the member cubes and a listing of measures of the member cubes (col. 7, lines 48-

Art Unit: 2166

53, included in the cube metadata are definitions of the dimensions, levels, and measures that define the cube).

It would have been obvious to a person of ordinary skill in the art at the time of invention was made to modify Mundy's disclosure to include dimension and measure information in the cube metadata as taught by Pasumansky because metadata are commonly used for mapping schemata of the source databases to dimensions and measures.

**As to claim 5**, Mundy discloses the system as claimed in claim 4, wherein the control cube has: an entire time dimension relative to the member cubes (page 6, meta data contains ranges of data in partitions) but does not explicitly disclose a listing of other dimensions of the member cubes and a listing of measures of the member cubes.

Pasumansky discloses a listing of other dimensions of the member cubes and a listing of measures of the member cubes (col. 7, lines 48-53, included in the cube metadata are definitions of the dimensions, levels, and measures that define the cube).

It would have been obvious to a person of ordinary skill in the art at the time of invention was made to modify Mundy's disclosure to include dimension and measure information in the cube metadata as taught by Pasumansky because metadata are commonly used for mapping schemata of the source databases to dimensions and measures.

**As to claim 8**, Mundy discloses the system as claimed in claim 5 but does not explicitly disclose wherein the control cube restricts access to member cubes.

Pasumansky discloses maintaining the security information about a cube in a cube metadata. The security information defines the access rights granted to users of OLAP sever with respect to the cube (col. 7, lines 61-64).

It would have been obvious to a person of ordinary skill in the art at the time of invention was made to modify Mundy's disclosure to include security information in the summary cube (associated metadata) as taught by Pasumansky for the purpose of providing data security by exposing only a subset of the cube to a user (col. 2, lines 12-14, Pasumansky). The skilled artisan would have been motivated to improve the invention of Mundy per the above such that there is a flexibility in defining security parameter for a cube (col. 2, lines 1-9).

**As to claim 10**, Mundy discloses the system as claimed in claim 9 but does not explicitly disclose, wherein different control cubes over the same pool of member cubes restrict data access to different portions of data for different users.

Pasumansky discloses maintaining the security information about a cube in a cube metadata (col. 7, lines 61-64). The security restrictions applied to virtual cubes (summary cube) as not dependent upon security restrictions applied to the physical cubes (col. 11, lines 52-58). Different control cube (summary cube) can have different security information in its metadata and providing different restriction to the same pool of member (physical cubes).

It would have been obvious to a person of ordinary skill in the art at the time of invention was made to modify Mundy's disclosure to include security information in the summary cube (associated metadata) as taught by Pasumansky for the purpose of providing data security by exposing only a subset of the cube to a user (col. 2, lines 12-14, Pasumansky). The skilled

Art Unit: 2166

artisan would have been motivated to improve the invention of Mundy per the above such that there is a flexibility in defining security parameter for a cube (col. 2, lines 1-9).

### *Response to Remarks*

Applicant's arguments have been fully and carefully considered but are moot in view of the new ground(s) of rejection. Refer to the corresponding sections of the claim analysis for details.

### *Conclusion*

Applicant's amendment necessitated the new grounds of rejection presented in this Office Action. Accordingly, **THIS ACTION IS MADE FINAL**. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 2166

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shew-Fen Lin whose telephone number is 571-272-2672. The examiner can normally be reached on 8:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam can be reached on 571-272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Shew-Fen Lin /S. L./  
Examiner, Art Unit 2166  
September 5, 2008

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